

CLAIMS

[1] A camera terminal in a monitoring system for imaging a monitoring subject region by operating, in coordination with one another, multiple camera terminals, said camera terminal
5 comprising:

a camera having a function to change an imaging region;
a communication unit operable to transmit and receive information identifying the imaging region to and from other camera terminals; and
10 an adjusting unit operable, where each camera terminal has a monitoring responsible region which is an imaging region to be monitored, and based on the information received by said communication unit from another camera terminal, to determine the monitoring responsible region to which the camera terminal
15 belongs so that the monitoring responsible region to which the camera terminal belongs adjoins, without a gap, the monitoring responsible region of the another camera terminal or a boundary of the monitoring subject region, as well as to adjust the imaging region of said camera so that an entire monitoring responsible
20 region is imaged, and

wherein said adjusting unit is operable to determine a region surrounding a first reference point as the monitoring responsible region, according to i) at least one perpendicular bisector of a line of segment connecting the first reference point provided within the
25 imaging region to which the camera terminal belongs and a second reference point provided within an imaging region of another

camera terminal adjoining to the imaging region to which the camera terminal belongs or ii) the perpendicular bisector and a boundary of the monitoring subject region.

- 5 [2] The camera terminal according to Claim 1,
wherein said adjusting unit includes:
 - a cooperative monitoring member selector which selects a camera terminal whose imaging region exists within a specified range, from among the other camera terminals;
 - 10 a cooperative monitoring memory to store information identifying the imaging region of the camera terminal selected by said cooperative monitoring member selector;
 - a monitoring subject region map memory to store a position and a range of the monitoring subject region;
 - 15 a monitoring responsible region determiner which determines the monitoring responsible region to which the camera terminal belongs based on the information stored in said cooperative monitoring member memory, and the position and range stored in said monitoring subject region map memory;
 - 20 an imaging range determiner which calculates focal length for displaying the entire determined monitoring responsible region onto an image plane belonging to said camera, and
 - a camera controller which controls the focal length of said camera so as to be the focal length calculated by said imaging range determiner.

[3] The camera terminal according to Claim 1,
wherein the first reference point is coordinates on the monitoring subject region projected in the center of the camera terminal to which the image plane belongs.

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[4] The camera terminal according to Claim 1,
wherein the first reference point is the center coordinates of the imaging region to which the camera terminal belongs.

10 [5] The camera terminal according to Claim 1,
wherein said camera further has a function to change a position of the imaging region;

15 said adjusting unit further has a monitoring responsible region comparison-evaluator to determine a position of the imaging region for adjusting the monitoring responsible region to which the camera terminal belongs closer to the size of a monitoring responsible region adjacent to the monitoring responsible region by comparing and evaluating the monitoring responsible region to which the camera terminal belongs and the monitoring responsible
20 region adjacent to the monitoring responsible region; and

said camera controller controls said camera in order to approximate to the position of the imaging region determined by said monitoring responsible region comparison-evaluator.

25 [6] The camera terminal according to Claim 5,

wherein said monitoring responsible region comparison-evaluator determines the position of the imaging region by moving the first reference point so as to equalize the distance from the first reference point to each boundary of the 5 monitoring responsible region.

[7] The camera terminal according to Claim 1,

wherein said camera further has a function to control a direction of line of sight, and

10 said adjusting unit further has an adjustment unit for direction of line of sight for adjusting the direction of line of sight of said camera for adjusting the configuration of the imaging region closer to the configuration of the monitoring responsible region.

15 [8] The camera terminal according to Claim 7,

wherein, in an evaluation function to evaluate a difference between the configurations of the imaging region and the monitoring responsible region, said adjustment unit for direction of line of sight is operable to determine the direction of line of sight of 20 said camera in order to approximate an evaluated value by said the evaluation function to a target value when the evaluated value at the time of coincidence of the configurations of the imaging region with the monitoring responsible region is a target value.

25 [9] The camera terminal according to Claim 8,

wherein when a point where the line of sight by said camera intersects at the monitoring responsible region is a reference point, the evaluation function is a function to indicate dispersion of a ratio of the distance from the reference point to the boundary of the 5 monitoring responsible region to the distance from the reference point to the boundary of the imaging region, and
the target value is zero.

[10] A monitoring system for imaging a monitoring subject region
10 by cooperatively operating multiple camera terminals, and said monitoring system comprising:

the multiple camera terminals according to Claim 1, and
a communication path connecting said camera terminals.

15 [11] A monitoring method for imaging a monitoring subject region by operating, in coordination with one another, multiple camera terminals, said monitoring method comprising:

an adjusting step of determining, in the case where each camera terminal has a monitoring responsible region which is an 20 imaging region to be monitored, and based on the information received by the communication unit from another camera terminal, the monitoring responsible region to which the camera terminal belongs so that the monitoring responsible region to which the camera terminal belongs adjoins, without a gap, the monitoring 25 responsible region of the another camera terminal or a boundary of the monitoring subject region, as well as to adjust the imaging

region of the camera so that an entirety of the monitoring responsible region is imaged, and

wherein in said adjusting step, a region surrounding a first reference point is determined as the monitoring responsible region,
5 according to i) at least one perpendicular bisector of a line of segment connecting the first reference point provided within the imaging region to which the camera terminal belongs and a second reference point provided within an imaging region of another camera terminal adjoining to the imaging region of the belonging
10 camera terminal or ii) the perpendicular bisector and a boundary of the monitoring subject region.

[12] A program for one camera terminal in a monitoring system for imaging a monitoring subject region by operating, in coordination with one another, multiple camera terminals,
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wherein said program executes the steps included in the monitoring method according to Claim 11.